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DAVID H HITT  
HITT CHWANG & GAINES  
225 UNIVERSITY PLAZA  
275 WEST CAMPBELL ROAD  
RICHARDSON, TX 75080

EXAMINER

DONAGHUE, LARRY D

ART UNIT

PAPER NUMBER

2154

DATE MAILED: 02/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

Applicant(s)

Examiner

Group Art Unit

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-22 is/are pending in the application.
- ☐ Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-22 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
  - ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 2
- ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other \_\_\_\_\_

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1. Claims 1-22 are presented for examination.
2. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claims 1-4, 6-11, 13-18, and 20-22 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the term background task is a relative term as defined in the specification, the lack of any reference frame renders the claim indefinite. As set forth in the specification background task is scheduled according to a hierarchical scheduler, the background task given a lower priority than another grouping of task (e.g. foreground) and scheduled according to different scheduling algorithm or scheme. As there are no other grouping of tasks, to give definite meaning to "background task", as claimed everything has the same priority level, therefore the claimed meaning of background task is indefinite.
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 7, 8, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) .

Dummermuth et al. taught the invention substantially as claimed including a controller for cyclicly activates context according to the number on instruction executed (col. 7, lines 23-35; col. 3, lines 19-25) and a counter that counts the number of executed with respect to a given task (col. 7, lines 23-34 and col. 3, lines 40-45).

As to claim 4, Dummermuth et al. taught vectoring to a selectable memory location (col. 8, lines 34-38).

As to claim 7, Dummermuth et al. taught that the application task contained the information as to how many instruction to execute (col. 8, lines 4-14, and 44-49) and the suggest to implement in hardware (col. 7, lines 23-34).

Dummermuth et al. did not expressly discloses the application of the task control system to background task. It would have been obvious to one of ordinary skill in the art to apply the teaching of Dummermuth et al. to background task, to gain the benefit of precise allocation of processor resources according to how many of instructions are to be executed in each task as opposed to how much time.

Claims 8, 11 and 14 fail to teach or define above or beyond claims 1, 4, and 7 and are rejected for the reasons set forth above.

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6. Claims 2, 6, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) as applied to claims 1 and 8 above, and further in view of Carmon (6,085,218).

Dummermuth et al. did not expressly disclose the use of a register on a processor or the decrementing the register to determine the task switch. It would have been obvious to one of ordinary skill in the data processing art to combine these references in view of the express suggestion of Dummermuth et al. to use specialized hardware to perform the operation.

As to claims 6 and 13, Carmon taught the use of the register (col. 3, lines 14-20, figure 1).

As to claims 2 and 9, Carmon taught decrementing the register (col. 3, lines 14-20, figure 1).

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) as applied to claims 1 and 8 above, and further in view of Vaitzblit et al. (5,528,513).

Dummermuth et al. does not expressly teach a hierarchical scheduler with foreground task dispatched on a priority basis.

Vaitzblit et al taught the use of a hierarchical scheduler with foreground task (isochronous) dispatch on a priority basis (col. 4, lines 25-30). It would have been obvious to one of ordinary skill in the data processing art to combine these reference to allow for efficient scheduling of dead-line sensitive task.

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7. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) as applied to claims 1 and 8 above, and further in view of Seibert et al. (5,239,652).

Dummermuth et al. failed to disclose placing the processor in an idle state. Seibert et al. taught place a processor in idle state in response to inactivity. It would have been obvious to combine the teachings to allow for the reduction of power consumption.

8. Claims 15, 18 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) as applied to claims 1, 4, 7, 8, 11 and 14 above, and further in view of Motomura (5,713,038).

Dummermuth et al. taught the invention substantially as claimed including a controller for cyclicly activates context according to the number on instruction executed (col. 7, lines 23-35; col. 3, lines 19-25) and a counter that counts the number of executed with respect to a given task (col. 7, lines 23-34 and col. 3, lines 40-45).

Dummermuth et al. did not teach a plurality of register sets and the interconnection of the plurality of register sets with the execution core. Motomura taught the use of a plurality of register sets and the interconnection of the plurality of register sets with the execution core. It would have been obvious to one of ordinary skill in the data processing art to modify the teaching of Dummermuth et al. with that of Motomura to realize high speed and more flexible context switching, in an conventional processor.

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As to claim 18, Dummermuth et al. taught vectoring to a selectable memory location (col. 8, lines 34-38).

As to claim 21, Dummermuth et al. taught that the application task contained the information as to how many instruction to execute (col. 8, lines 4-14, and 44-49) and the suggest to implement in hardware (col. 7, lines 23-34).

As to claim 22, It would have obvious to one of ordinary skill in the data processing art to included the teaching of Dummermuth et al. and Motomura, to gain the benefit of precise allocation of processor resources according to how many of instructions are to be executed in each task as opposed to how much time and to realize high speed and more flexible context switching, in an general-purpose computer.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) and Motomura (5,713,038) as applied to claim 15 above, and further in view of Seibert et al. (5,239,652).

Dummermuth et al. and Motomura failed to disclose placing the processor in an idle state. Seibert et al. taught place a processor in idle state in response to inactivity. It would have been obvious to combine the teachings to allow for the reduction of power consumption. Vaitzblit et al. (5,528,513).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) and Motomura (5,713,038) as applied to claim 15 above, and further in view of Seibert et al. (5,239,652).

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Dummermuth et al. and Motomura did not expressly teach a hierarchical scheduler with foreground task dispatched on a priority basis.

Vaitzblit et al taught the use of a hierarchical scheduler with foreground task (isochronous) dispatch on a priority basis (col. 4, lines 25-30). It would have been obvious to one of ordinary skill in the data processing art to combine these reference to allow for efficient scheduling of dead-line sensitive task.

11. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth et al. (6,009,454) and Motomura (5,713,038) as applied to claim 15 above, and further in view of Carmon (6,085,218).

Dummermuth et al. and Motomura did not expressly disclose the use of a register on a processor or the decrementing the register to determine the task switch. It would have been obvious to one of ordinary skill in the data processing art to combine these references in view of the express suggestion of Dummermuth et al. to use specialized hardware to perform the operation.

As to claim 16, Carmon taught the use of the register (col. 3, lines 14-20, figure 1).

As to claim 20, Carmon taught decrementing the register (col. 3, lines 14-20, figure 1).

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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Hisanaga et al.	5,761,522
Gravenstein et al.	5,799,182
Parady et al.	6,295,600

13. A shortened statutory period for response to this action is set to expired THREE (3) months, ZERO days from the date of this letter. Failure to respond within the period for response will cause the application to be abandoned. 35 U.S.C 133.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to L. Donaghue whose telephone number is (703) 305-9675. The examiner can normally be reached on M-F from 8:00 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An, can be reached on (703) 305-9678. The fax phone number for an official fax is (703) 746-7238, an after-final fax is 703-746-7238 and a draft or non-official fax is 703-746-7240.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.



LARRY D. DONAGHUE  
PRIMARY EXAMINER